

## 2017 Hope Bay Environmental Monitoring Program Annual Summary

TMAC Resources has completed studies under the 2017 NRI Research Licence (04 005 17R-M). A summary of the studies conducted in 2017 is provided below and included the following components:

- Hydrology
- Aquatics
- Fish and fish habitat
- Wildlife
- Atmospheric

TMAC Resources is applying to renew NRI Research Licence (04 005 17R-M) for 2018 and continue the studies identified below.

### Hydrology

Hydrology data were collected as part of the 2017 Doris North Hydrology Compliance Monitoring Program and baseline data collection in the Madrid area. A network of streamflow and lake level hydrometric stations were established and monitored during the 2017 open water season. Field visits included water level surveying and stream discharge measurements. This is proposed to continue in 2018.

### Aquatics

Aquatic studies included monitoring according to the established Aquatic Effects Monitoring Program (AEMP) in Doris Lake and a reference site, and the collection of baseline data in several lakes in the Madrid-Boston area. Activities included monitoring of water level, ice thickness, water quality and physical limnology, benthic community characterization, sediment quality, and phytoplankton biomass.

The marine program included sampling in July, August and September. Sampling was focused in the area of the future mine discharge location in Roberts Bay and at a reference location. Monitoring activities included water and sediment quality sampling, physical limnology profiling and benthos sampling.

### Fish and Fish Habitat

Fisheries studies included a marine baseline program, sampling in support of a fisheries assessment, and the collection of baseline data at potential fisheries offsetting sites.

The marine baseline program included fish sampling in August. Sampling was focused in the area of the future mine discharge location in Roberts Bay and at a reference location. Sampling involved setting nets, minnow traps and crab traps. Sampling was also completed to collect marine amphipods.

The fisheries assessment fieldwork was conducted in June, July and August. The assessment involved habitat mapping in a network of streams and ponds in the Madrid-Boston area as well as fish community sampling.

## Wildlife

The 2017 wildlife compliance monitoring program consisted of the camera program and baseline surveys for migratory birds. Camera checks and photo downloads were completed in the Spring and Fall. The camera program is primarily designed to monitor grizzly bear and wolverine populations surrounding the Project site to determine if there is a zone of influence and to capture wildlife interactions with camp infrastructure. Wildlife interactions, incidents and mortalities are also recorded throughout the year by site staff.

Surveys for migratory birds were conducted in May and September to collect baseline data in the Madrid-Boston area.

## Atmospherics

The 2017 atmospherics program consisted of four main components: meteorological monitoring, air quality monitoring, dustfall monitoring, and incinerator stack testing.

Meteorological monitoring included maintenance of Doris and Boston meteorological stations. Data were downloaded and QAQC of the data to ensure proper operation of the meteorological instruments. Air quality monitoring field work included the scheduled maintenance, service and filter exchanges for the ambient air samplers.

Dust deposition was quantified over the summer months using dustfall canisters and over the winter months with snow core sampling. Locations were monitored for dustfall from crushing, the tailings impoundment facility and for background dustfall concentrations.

Incinerator stack testing also occurred in 2017. The incinerator emissions were tested for dioxin, furan and mercury concentrations. Another stack test is planned for 2018.